

JSC Names Two Crews To Fly Orbiter ALTs

JSC Tuesday announced crews for the Space Shuttle Approach and Landing Test (ALT), the initial flight test of the Shuttle Program. The ALT tests are scheduled to begin in mid-1977.

Two 2-man crews were named. They are: Fred W. Haise, Jr., commander and Charles G. Fullerton, pilot; Joe H. Engle, commander and Richard H. Truly, pilot. Both crews are scheduled to fly ALT missions with Haise and Fullerton making the first flight.

The ALT flights will be conducted at the NASA Dryden Flight

Ramo Speaks at AIAA Meet

Dr. Simon Ramo, chairman of the White House Committee on Science and Technology and vice-chairman of the board of TRW Inc., Tuesday will be the dinner speaker at the conclusion of AIAA Technical Mini-Symposium at the Gilruth Recreation Center.

Dr. Ramo will speak on "New Technology Frontiers for the Next



Decade" at the 7:30 pm banquet. The banquet, preceded by cocktails at 7, winds up an afternoon of concurrent sessions on physical sciences, life sciences and engineering/technology. The sessions and banquet are open to everyone.

The "R" of TRW, Dr. Ramo was a Cal Tech magna cum laude PhD at age 23, and held 25 patents by the time he reached 30.

The Mini-Symposium starts at 4 pm March 2 with the three simultaneous sessions. Reservations may be made as late as Monday, March 1 with Dottie Hamilton at 483-4555 or Lillian Hudson at 483-4991. The tab for cocktails and ribeye steak dinner is \$7/person.

Symposiums sessions and chairmen are as follows:

Physical Sciences, Room 204: Program Experience, Space Transportation System Era, Systems Impact, R. F. Hergert of JSC chairs all three.

Life Sciences, Room 206, Dr. Wayland E. Hull/JSC general chairman: Program Experience, Dr. H. W. Scheld/JSC; Research Related Topics, J. V. Bailey/JSC; A Look to the Future, Dr. E. C. Mosely/JSC.

Engineering and Technology, Room 104, James C. McLane/JSC general chairman: Space Transportation System Topics, P. M. Deans/JSC; Guidance and Control Topics, T. B. Murtagh/JSC; Special Engineering Topics, F. A. Wierum, Rice University.

Research Center in California. The Orbiter will be carried aloft to an altitude of about 25,000 feet atop a specially modified 747 aircraft. It will then be released allowing the crew to fly the Orbiter to the ground. Several unmanned and manned non-release flights will precede the initial "free flight" of the Orbiter.

The crews will participate in the various phases of Orbiter test and checkout between now and the first flight. Both crews will train for the flights utilizing the NASA T-38 aircraft with special speed brake; the Shuttle Training Aircraft, a modified twin jet Gulfstream II; Shuttle Procedures Simulator and the Orbiter Aeroflight Simulator.

Haise, 42 (civilian), commander of the first crew was selected for the astronaut program in April 1966. He was backup lunar module pilot for Apollos 8 and 11, lunar module pilot on Apollo 13 and

(Continued on page 2)

NACA Alumni Hold Reunion

Former NACA employees will hold a reunion October 8-10 at the Grove Park Inn, Asheville, NC. Reunion details will be sent to persons who have registered, and those who have not returned the questionnaire should do so as soon as possible.

Former NACA employees at JSC who have not been contacted are asked to call 483-5584.

Rumors of ALSEP-14 Death Are Greatly Exaggerated

This didn't start out to be a continuing story. Last issue we mentioned the untimely demise of the Apollo 14 ALSEP (Apollo Lunar Scientific Experiment Package). Scarcely 32 days after the ALSEP beeped its last beep the technicians at the Madrid Tracking Station reported acquisition of signal from the station.

Madrid reported that at 0232 GMT February 19 the ALSEP signal was strong and good and an emergency real-time support period was called. Data was being received at the ALSEP control room in Building 30 less than 2 hours later via the Merritt Island Tracking Station.

As we previously reported the ALSEP 14 receiver has been out of commission since last March, almost a year prior to its transmission failure. When the Madrid technicians began their real time support, telemetry indicated the receiver was also functioning. The resurgence of activity from the Apollo 14 station restored command uplink capability, putting the entire station back on line.

JSC and Bendix engineers and technicians were surprised and extremely pleased. "Would you believe?" were heard from Building 30 to Building 31 to Building 2 and back.

The station is not only alive and well, but for the Charged Particle



THE SARAH AND BOB SHOW - KPRC-TV's Sarah Lowrey interviews Space Shuttle Program Manager Robert F. Thompson for the ten-part Shuttle series appearing this week and next on Channel 2's Scene at Six and 10 pm newscasts. Cameraman Bob Brandon films the interview in the full-scale Shuttle cargo bay mockup in Bldg 9.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS



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Friday, February 27, 1976

Lunar Science Meet Expands To Include Planetary Topics

Discoveries made about the Moon will be applied to deciphering the origin and early history of the solar system when several hundred scientists gather at JSC March 15-19 for the Seventh Lunar

Science Conference.

A new topic, "Earliest History of the Moon and Solar System" will be introduced, in which scientists will use data obtained from lunar rocks to understand what Earth and the other planets were like between the time that the solar system formed about 4.6 billion years ago and about 3.7 billion years ago, the age of the oldest rocks preserved on Earth.

The fact that moon rocks are beginning to tell us something about other planets is one of the most exciting aspects of current lunar research, according to the conference cochairmen, Dr. Larry A. Haskin, JSC Chief of Planetary and Earth Sciences, and Dr. Robert O. Pepin, Director of the Lunar Sciences Institute. Bodies like the Moon, Mars, and Mercury have apparently formed in much the same way, and their early histories are dominated by the impacts of large bodies and by widespread melting within them.

The Moon preserves some of the

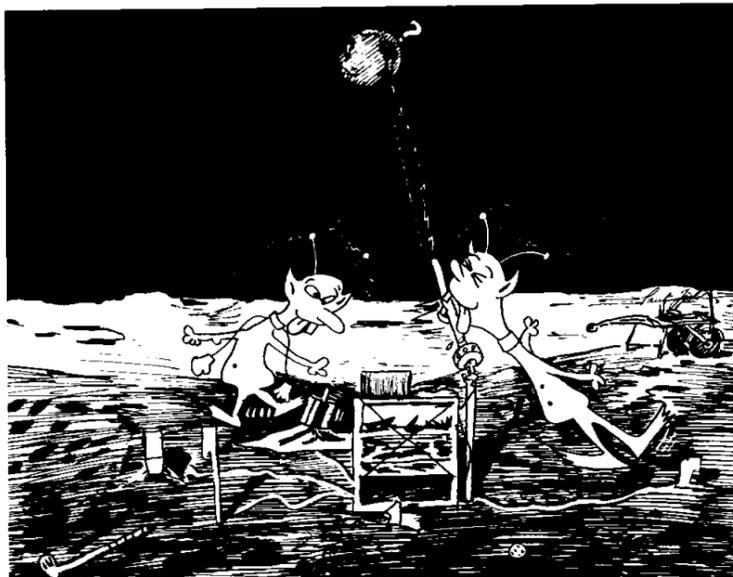
details of these processes, and several scientists at the conference will describe how lunar data can be used to interpret the craters and volcanoes recently photographed by robot spacecraft on the surfaces of Mercury and Mars. Other papers will discuss meteorites, the satellites of Jupiter (which are about the size of our own Moon), and the use of Earth-based telescopes to measure the chemical composition of the asteroids.

Despite the changing emphasis in lunar studies, many features about the Moon itself are still not understood. Controversy persists about why the lunar surface is magnetic, whether the Moon has an iron core, what the inside of the Moon is made of, and what kinds of chemical separations occurred when the Moon was young. If we can answer these questions for the Moon, we may be able to answer them for other planets, including Earth.

This year's emphasis on more general planetary studies is a new trend for the Lunar Science Conferences, which have been held annually since 1970, when the first conference assembled to hear about the scientific results from the Apollo 11 mission, the first manned landing on the Moon. The conference brings together scientists in such diverse fields as geology, chemistry, physics, astronomy, engineering, and biology. More than 700 scientists from as far away as Australia attended last year's conference.

The conference begins on Monday, March 15, with three simultaneous sessions and continues through Friday. Sessions will be held in the JSC Main Auditorium and in the JSC Gilruth Recreation

(Continued on page 2)



JPL Team Develops System For Sterile Blood Handling

A promising system for transferring blood without contamination has been devised by a team of scientists and engineers at NASA's Jet Propulsion Laboratory under contract to the National Heart and Lung Institute of the National Institutes of Health, Bethesda, Md.

Extending a concept employed in spacecraft sterilization work for NASA, Dr. Richard M. Berkman, James C. Arnett and Edward L. Cleland produced the Aseptic Fluid Transfer System (AFTS) primarily for use in blood banks.

Two dual-walled tubes, fused and penetrated by heat, are the key to the proposed method of cleanly transferring blood from one container or bag to another.

The JPL-designed system should substantially increase the storage time of blood components, according to Dr. Berkman, a Ph.D. microbiologist and team leader.

"Present transfer systems employed in blood banks do not insure sterility, hence frozen-thawed blood must be used within one day or else be discarded," Berkman says. "Our evaluation of the AFTS shows virtually no contamination — less than 0.001 per cent. The heat fusion process kills off any microbes on the connecting tubes."

Berkman was responsible for ensuring the sterility of the system, Arnett was the design engineer, and Cleland the materials engineer.

A biomedical project of JPL's Civil Systems Program Office, the AFTS will be tested clinically in the near future by Dr. Byron Myhre at Harbor General Hospital, Torrance, Calif. The two-year development was sponsored by the Division of Blood Diseases and Resources of the National Heart and Lung Institute.

The AFTS connector which the

inventors believe unique can be manufactured as part of the blood bag or other container. Polyvinyl chloride is used for the outer portions of the tubing and the flat attachment links (only 5 centimeters or 2 inches long). The inner part of the links — through which the liquid flows — is made of heat-resistant kapton.

When heat of about 200 degrees Celsius (400 degrees Fahrenheit) is applied through a metal clamp to the flat end links of each tube, the tubes are effectively fused and the joining area is sterilized. The linking process is completed within one minute.

At present the heat is applied by a small, electrically powered clamping device similar to a mini pants presser. The inventors say heat could be applied by a portable hand-held sealing device no larger than an ordinary hair dryer.

Patents on the invention have been applied for by the California Institute of Technology, which operates JPL for NASA.

The California Institute Research Foundation, the patenting arm of Caltech, is negotiating potential licenses with commercial manufacturers of blood bags and other medical devices who have expressed interest in the AFTS. JPL may provide further technical support in future commercial development of the system.

Dr. Myhre, pathologist at Harbor General Hospital, tentatively evaluated the AFTS method as having "very great possibilities." The system will be used in Dr. Myhre's laboratory at the hospital for the next several months.

The JPL method may more than triple the safe storage time. Berkman reported that 99.999 per cent of all bacteria and spores were killed in AFTS tests, even when the tube surfaces were purposely contaminated with massive numbers of these microbes.

Orbiter ALT

(Continued from page 1)

backup commander on Apollo 16. He is the only crewman named that has flown in space.

Fullerton, 39 (Lieutenant Colonel, USAF), pilot of the first crew was one of the USAF Manned Orbiting Laboratory Program crewmen selected for the astronaut program in September 1969. He was a member of the support crews for the Apollo 14 and 17 missions.

Engle, 43 (Colonel, USAF), commander of the second crew was selected for the astronaut program in April 1966. He was a member of the astronaut support crew for Apollo 10 and the backup lunar module pilot for the Apollo 14 mission.

Truly, 38 (Commander, USN), pilot of the second crew was one of the USAF Manned Orbiting Laboratory Program crewmen selected for the astronaut program in September 1969. He was a member of the support crew for all three manned Skylab missions.



VISITS JSC — Mrs. Douglas MacArthur, widow of the late General of the Army, is shown an array of lunar surface tools and instruments by JSC Astronaut Office Chief John Young during Mrs. MacArthur's February 19 visit to JSC.

LAGEOS Readied for Launch

LAGEOS, a geophysics research satellite, expected to last several million years, completed tests toward the end of January at the Goddard Space Flight Center in Greenbelt, Md., and will soon be available to aid scientists in predicting earthquakes.

The Laser Geodynamic Satellite (LAGEOS) was shipped to the Western Test Range in California the first week in February, for launch in late April.

LAGEOS, looking like a cosmic golfball, is designed to provide a stable point in the sky to reflect pulses of laser light. By timing the return of the laser beam to an accuracy of about one 10-billionth of a second, scientists expect to measure the relative location of participating ground stations within a few centimeters (about an inch). Using this data, scientists can de-

velop and improve models of the Earth's crustal motion — models that will be useful in predicting earthquakes.

JSC Sponsors Workshop on Fluid Shifts

A three-day workshop on Fluid and Electrolyte Changes in Manned Space Flight will be held March 8-10 by JSC. Meeting next door at the Lunar Science Institute, the workshop sessions will examine possible investigations in crew fluid/electrolyte changes in future flights that can be conducted through ground simulations or on Shuttle/Spacelab flights.

Apollo and Skylab medical findings, with emphasis on fluid/electrolyte shifts, will also be presented during the workshop.

Workshop registration starts at 8 am March 8 at the Lunar Science Institute lobby. JSC coordinator for the workshop is Dr. Carolyn S. Leach, head of the Endocrine and Biochemistry Laboratory, ext 2465.

Lunar Science

(Continued from page 1)

Center. The conference topics are:

Constraints on Structure and Composition of Planetary Interiors; Characteristics and Movements of Materials on Lunar, Planetary and Asteroidal Surfaces; Characterization and Evolution of Maria and other Volcanic Landforms; Characterization and Evolution of Planetary Crusts; Nature and Effects of Impact Processes; Extraterrestrial Materials as Solar/Interplanetary/Interstellar Probes; and Earliest History of the Moon and Solar System.

The Lunar Science Conferences are sponsored jointly by the Johnson Space Center and the Lunar Science Institute, Houston. Proceedings of the first six conferences fill 18 thick volumes and are supplemented by material published in many scientific journals.

JSC Seeks Spanish-Surnamed Students for Job Programs

Spanish Surnamed Americans (SSA) students were actively recruited for the JSC Summer Aid, Vocational Office and Industrial Cooperative Training programs at a conference February 18 at the Ripley House Community Center in Houston, Texas.

The "NASA Career Day" featured Apollo 16 command pilot Thomas K. Mattingly as guest speaker, Stan Goldstein, Chief of Employee Development Branch of Personnel and Gloria B. Martinez, SSA Recruiter for Personnel.

JSC's recruiting of Spanish surnamed students is aimed toward proving "in-school" training and transportation to jobs for high school students, while developing personal contacts in the Houston school district and in the community.

The Continental Can Company of Houston donated \$5,000 to the Neighborhood Daycare Center Association Transportation Department for SSA student bus transportation. The students will pay a nominal fee. In the past, the lack of transportation has been a major factor in not having a successful SSA Recruitment Program.

A film clip of SSA students in the VOE, ICT, and co-op Programs was shown on February 22 on Channel 11's "Hola Amigos TV Program", featuring VOE student Esther Acosta of Jeff Davis high

school and Jose Andrew Rodriguez, Texas A&I co-op student. Joe Mendiola, a co-op program graduate and new aerospace engineer at JSC will appear on "Mexican-American Dialogue" TV program (Channel 13) on March 13. Other students in the film clip are Humberto De Los Santos, ICT student of Dickinson high school, Richard Gonzales, co-op student from University of Texas at El Paso and Mary Lou Canales, co-op student from Texas A&I.



MOVES UP IN WORLD — If you think you saw this photo of Betty Fedderson about three Roundups ago, you did — when she was named Secretary of the Month. She was recently appointed secretary to JSC Director Christopher C. Kraft, Jr. Kraft's former secretary, Betsy Bednarzyk, now manages word-processing operations for the Director's staff offices.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS

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if **GREAT WORKS** HAD NEVER BEEN **RECORDED**



who **WOULD KNOW?**

RECORD YOUR EFFORTS TO REDUCE COSTS ON Form 1105A...MAIL IT TO: BH4 - Cost Reduction Office

EAA ATTRACTIONS

TICKETS

On sale in Bldg 11 Exchange Store 10 am to 2 pm, no refunds: Windmill Dinner Theater, *Bottoms Up* - a Las Vegas review, March 16 - April 18, \$14/couple, only 20 tickets available. Dean Goss Dinner Theater, Neil Simon comedy *The Star Spangle Girl* March 9 - April 7, \$16/couple. SeaArama, \$3.25 adults, \$2.25 children. Free Disney Magic Kingdom Cards and Lion Country Safari Cards. EAA phone number is 4592.

TENNIS CLUB

JSC Tennis Club's first 1976 tournament was held February 14, 15 and 16 with 115 entrants in seven events.

Valentine's Day tournament winners were as follows: Men's advance singles, Gid Weber; women's advanced singles, Evelyn Carter; men's intermediate singles, Jim

Walker; women's intermediate singles, Katherine Tamer; advanced mixed doubles, Gid Weber and Tracy Blumentritt; intermediate mixed doubles, Carl Watkins and Bunny Brown; novice mixed doubles, Chris and Susan Zinn.

The next JSC Tennis Club tournament is scheduled the weekend of April 3-4, and entry deadline is March 26.

To Join the Tennis Club, call membership chairperson Carolyn Thompson at 4551, and to help out in future tournaments, call tournament director Jim Walker at 2541.

DEFENSIVE DRIVING - ONE MORE TIME!

EAA is sponsoring the Defensive Driving course one more time for procrastinators who missed out when it was offered in January and November. Registration will be in the Gilruth Center lobby March 1 and 2 from 7:30 to 9 am, 10:30 am to 1 pm, and 4 to 6 pm. Classes will be the following week, either Mon and Wed, or Tues and Thurs 6 to 10 pm. Costs \$8 payable at registration.

Ames System Helps Forecast Forest Fires

Those who fight to prevent and control forest fires will get an assist from space this year as a new satellite-linked monitoring system begins a constant watch on thousands of square miles of precious California forests.

Some 23 NASA-designed ground stations will monitor forest conditions throughout California's important Region One redwood forest area, providing data every three hours to foresters in Sacramento through a geostationary weather satellite.

NASA's Ames Research Center in Mountain View, California, developed the compact, self-powered stations in cooperation with the State of California's Division of Forestry (CDF). Part of the network will be operating during the 1976 forest fire season; the remainder will be completed in time for the 1977 season.

The 200-pound ground stations, powered by solar and wind energy combined with storage batteries, will provide continuous reports on wind speed and direction, air temperature, new solar radiation, relative humidity, and the moisture content of such flammable forest litter as pine needles and grass.

Sensors to measure rainfall and air pollution - including particulate matter and ozone concentrations - may also be added to the forest monitors.

Once every three hours, data from the automatic stations will be relayed through Synchronous Meteorological Satellite 2, which is in constant view of the area from its vantage point over the equator.

The satellite, operated by the National Oceanic and Atmospheric Administration (NOAA), sends the data to a NOAA receiving station at Wallops, Virginia, which automatically relays data to NOAA computers at Suitland, Maryland.



NOISE DAMPER - Test engineers at Marshall Space Flight Center prepare a 6.4-percent scale Space Shuttle for a test aimed toward lessening the noise of a Shuttle launch. The MSFC investigations involve water streams from spray bars around the launch pad flame trench to reduce the level of solid-booster and main engine noise at ignition and during liftoff.

NASA Launches Marisat-1 for Comsat

NASA February 19 launched the first satellite for a new maritime communications system for Cape Canaveral's Complex 17B.

Called Marisat-1, the satellite was placed in geosynchronous orbit over the equator at 15 degrees west longitude above the Atlantic Ocean about 500 miles southwest of the coast of Liberia. A second Marisat,

Marisat-B will be positioned over the Pacific later this year.

The satellite system will be owned and operated by a consortium headed by the Comsat General Corp. Comsat General will fully reimburse NASA for the Delta 2914 launch vehicle, launch services, and related costs.

Immediately upon satisfactory

completion of the orbital placement of the MARISAT satellites and their operational testing, U.S. Navy and commercial services will begin. Commercial telephone, telex and data communications services will be available linking ships and offshore facilities at sea with shore stations interconnected into the U.S. domestic and international common carrier telephone and record/data communications networks worldwide.

Production quantities of MARISAT mobile terminals have been produced and many have been purchased or leased from COMSAT General and installed on ships flying the flag of a number of nations of the world. Commercial common carrier service via MARISAT is expected to begin in early April.

The U.S. Navy will be a substantial customer of the MARISAT system, using capacity at different frequencies for operational communications and pending the completion of its own Fleet Satellite Communications (FLEETSATCOM) System.

The U.S. Maritime Administration has entered into a contract with COMSAT General to provide for certain demonstrations of various MARISAT system uses.

A Delta 2914 launch vehicle carried the 655-kilogram (1,445-pound) Marisat-1 into a highly elliptical transfer orbit of 36,762-kilometer (22,825-mile) apogee and 185-km (115-mi) perigee, with an inclination of 26 degrees to the Earth's equator.

A 293-kg (646-lb.) apogee kick motor, augmented by an on-board hydrazine system, will later boost Marisat-1 from its elliptical transfer orbit into an Earth-synchronous orbit at an altitude of 35,788 km (22,220 mi.), inclined 2.5 degrees to the equator.

The spacecraft's speed in orbit at this altitude maintains its location over the Atlantic. Small gas jets on the spacecraft keep it on station and oriented properly to receive and retransmit signals from Earth.

The new satellite system will permit rapid, high quality communications between ships at sea and home offices. Telephone and Telex messages may be exchanged without fear of interference or delay due to severe weather or ionospheric disturbances that might interrupt radio traffic.

Roundup Swap-Shop

Swap Shop advertising is open to JSC federal and on-site contractor employees. Goods or services must be offered as advertised, without regard to race, religion, sex or national origin. Non-commercial personal ads should be 20 words or less, and include home telephone number. Typed or scribbled ad copy must be received by AP3/Roundup by Thursday of the week prior to publication.

BOATS

28-ft Trojan cabin cruiser, good buy, great shape, many extras. Vanos, 483-4786.
72 Venture 22, working sails, head, dinette, sleeps 5, anchor, 6-hp Sea Gull, trlr, many extras, \$3500. Bullock, 483-6095.
21-ft Vanguard fiberglass boat w/tilt trlr. 482-7947.

VEHICLES

71 Honda CL-70 street bike, \$160. White, 554-2916.
71 Cadillac Coupe deVille, white w/white vinyl, solid comfort, good MPG, \$2200 firm. Russell, 477-6393 after 5:30.
64 MGB, 70 K miles, mech perf, good top and tonneau, 2 new tires and exhaust, \$550. Tuthill, 487-5044 after 5.
74 Triumph Spitfire, 9,000 miles, AM/FM stereo, air, mags, radials, fog-lites, lugrack, canopy yellow. 944-3342.
69 Chevy pickup 1/2-ton, 307 V8, LWB Fleetside w/camper shell, 47.5K miles, good shape. 488-2613.
70 Opel Kadett, 1900cc, 4-sp, air, low miles, new steel belts, xint cond. 585-5735 after 5.
75 Honda CB-550K-1, less than 4000 miles, full dress, plus, Dr. sez no ride, \$1750 - maybe trade. 482-3100 after 4:30.
72 Yamaha 100 cc Enduro, xint cond, 3800 miles, \$350. Bland, 333-4580.
75 Granada 2-dr, air, FM/AM, std xmission 6-cyl, low miles, vinyl top, \$3650. Pool, 333-2805.
39 Pontiac, needs restoring, \$250. Rogers, 332-5490.
Porsche extractor exhausts, new, fits 911/914/356; also VW dual carb intake manifolds and exhausts. Vaughn, 474-2911.
72 VW Super Beetle, 52K miles, yellow, AM/FM, xint cond, \$1800. 471-5711 after 5:30.
Late 70 Olds Delta 88 4-dr sedan in mint cond, see to believe. 334-2461.
71 Pontiac Bonneville 4-dr hrdtp, 455 2-bbl, air, AM/FM, steel belts, 42K miles, xcptly clean, \$1600. 946-1841 after 5:30.
72 Pontiac Lemans 2-dr HT Sport, loaded w/xtras, dk brwn w/beige vinyl top, xint cond, \$2295. Sam, 483-3647.
27-in Schwinn Continental men's 10-sp, xint cond, w/xtras, \$95. 554-7052.
66 Mustang 6-cyl, \$700. 941-0102.

PETS

Cocker Spaniel male AKC-reg puppies, buff, Ch bloodlines, pedigree included, \$100-\$125. 482-7858.
Male Border Collie/Lab (great for herding ducks), 6 mos, shots, needs home, free. 474-2988 after 5.

WANTED

Responsible person wants to rent pickup camper or motor home for 2 wks in July. Parker, 488-3346.
Backpack for carrying baby. Howe, 483-5276.
Trade extra-firm for soft kingsize mattress. Haines, 941-2495.
Party who gave Collie named "Mark" to Joe Duhon two yrs ago please call John Cox, 482-3502.
Chainlink fence, will remove and pay fair price. 645-5074.
Parts for 27-in Itoh bike. Brenton, 488-4372.

PROPERTY & RENTALS

Two Lake Livingston lots, pay xfer fees and take over payments, T. M. Ward, 488-5445.
1.75-acre Friendswood lot w/young trees on shell-topped Richmond Lane, city water within 500 ft, city sewage 130 ft, \$11,500. Scott, 482-3011.
5-bdr 3-bath 2685 sq ft luxury wtrfrnt in Lazy Bend, screened patio, covered slip, piers, \$82,500 as is. Owner, 334-3150.
Lease 2-2-2 townhouse, formal lvgng room, fam room, \$285 rent plus deposit. Hernandez, 333-4181.
Rent 4-2-2 CLC, fireplace, patio, fenced, walk to shopping, \$425/mo. 474-2081.
Lake Livingston wooded waterview choice lot at Cape Royale, enjoy fishing, hunting, tennis, golf etc, ideal homesite or investment. 488-4487.
3-2-1 in Lake Livingston Cape Royale, attractively furn, wooded, waterview, rent wkly or mnthly, reserve early. 488-4487.

HOUSEHOLD ARTICLES

Wood octagon table w/4 chairs, good cond - table could use resurfacing. 488-2613.
Zenith 17-in color TV, xint cond, \$185; Philco 17-in color TV \$165. 488-3112 after 5.
Antique walnut dining room suit: table, 6 chairs, buffet, very good cond, \$600. Harris, 665-8228.
94-in medium gold velvet couch, like new, \$800 value, sell for \$400. 528-7245 after 3.
Sears triple-action exerciser bike, like new, \$45. 488-4005.
Spring-tension rower exerciser, \$10. 488-4005.
Boys hockey iceskates, never used, \$10. 488-4005.
Daisy BB gun, \$5. 488-4005.
Acme Supreme Juicerator, stnls steel, like new, \$100. 488-4005.
Zenith 12-in B&W portable TV, \$25. 488-4005.
Solid-maple spindle twin bed frame, \$35. 488-1366.

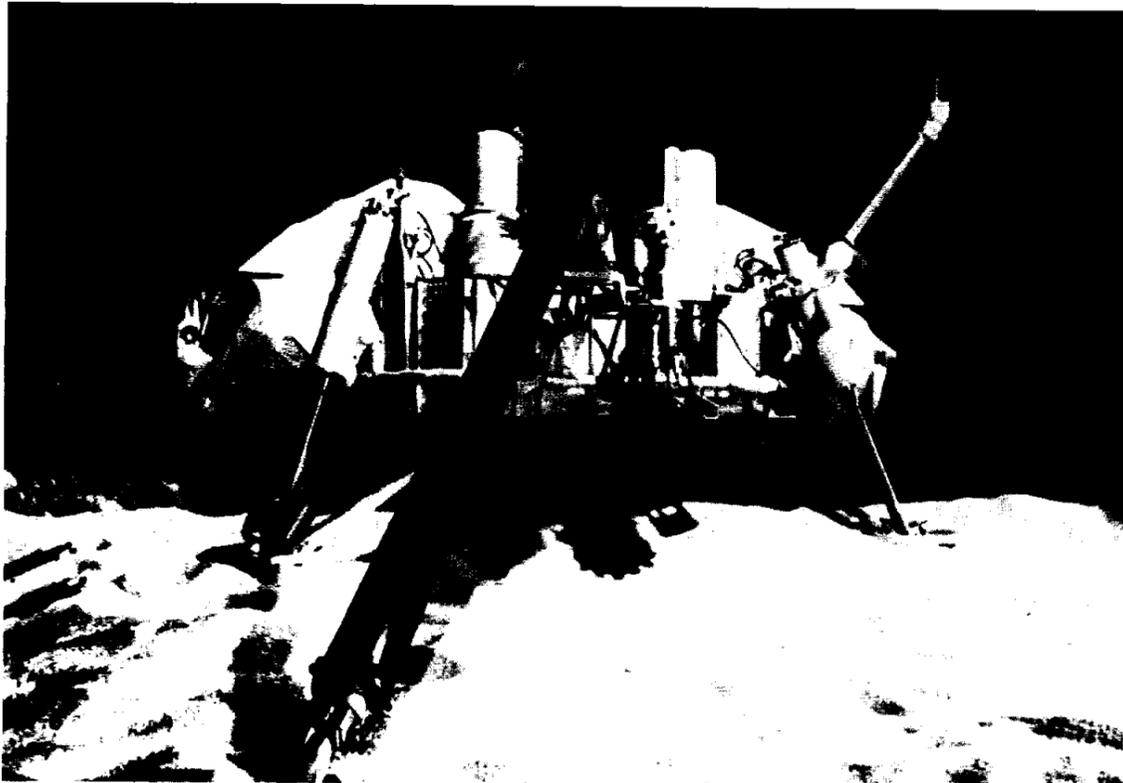
Aquariums: 20-gal, long, w/54-in door cabinet base, \$60; 10-gal Slim Jim, less stand; both w/fish, filter, pump, lite fxtr, shield, gravel, artifl pnts etc. 554-7052.
60-in coffee tables: on Spanish style w/2 side doors, \$65; one w/walnut inlays, \$45. 554-7052.
Antiques: washstand, marble top and back, w/2 doors, \$185; mirrored oak sideboard, 42-in, \$285; oak rkng chair, \$110; birdseye-maple rkng chair, \$75. 554-7052.

MISCELLANEOUS

Four 6-in by 13-ft treated pilings, \$10/ea. 554-7052.
Winch and mounting stand for boat trlr, \$10. Ward, 488-5445.
Mobile/fixd 4x8x1 lighted sign, fishing lites across top, cost \$1350, will negotiate. Vaughn, 474-2911.
B&H lo-lite XL-672 Super-8 movie cam, shot 1/2 roll, \$240 new, sell \$125 or trade for Cobra 29 CB. 482-3100 after 4:30.
Misc motorcycle parts, mostly Honda 100, all cheap - some free. 482-3100 after 4:30.
10-in Powerkraft radial-arm saw 2-hp on stand, almost new, \$195. 488-1028.
Lady's pear-shaped 3/4-carat diamond wedding ring set appraised at \$900, sell for \$600, size 5 1/2, new. 488-3377 after 5.
Membership in Goose Creek Country Club, Baytown. 471-3598.
Ed White 10th Anniversary Space walk silver medal, only 1000 minted, \$35, tax deductible, benefits Ed White Youth Center. 474-2851.
Mercury 20-hp OB, \$75; aquarium, \$5. Casserly, 479-6433.
Heath SB-300 w/AM, CW & SSB crystal filters, mint cond, prof wired, low usage, compl w/manual, \$199. Ward, 488-0715.
Yamaha alto sax, 4-yrs old, newly repadded, etc, \$200 or best offer. 481-0069 after 6.
Remington Model 25 elec typwrttr w/16-in carr. 554-7098.
Olivetti Programma 101 desk-top computer. 554-7098.
Flight and ground instruction, pvt/comm/inst biennial checks, simulator avail. Black, 482-1635.
3 1/2-hp self-prop lawnmower w/grasscatcher, xint cond, Toro-built for Penney's, \$50; Sears 2 1/2-hp edger, \$50. Cohen, 488-3171 after 5:30.
Weaver 4x scope, \$20. 479-3653.
Dual steel gas tanks for 63-72 GMC/Chevy pickup, \$95. 481-3787.

FOUND

A quantity of money was found on site recently. Please contact the Security Branch Chief and describe in writing the total amount, denominations, and approx date/location of loss.



LIFE SEEKER — From Independence Hall to the surface of Mars in 200 years — Viking 1 Lander last week was given a "Go" for landing on the martian surface July 4. Touchdown will be about 10:40 pm CDT after 16 days in orbit around the red planet. Lander is equipped with photographic and soil analysis equipment and is expected to relay earthward the first pictures of the landing site within 40 minutes after touchdown. Viking 2 will deboost into martian orbit August 7 and its Lander will thumpdown on the surface September 4.

Satellite to Track Ford Model-T During Around-World Auto Race

A 1914 Model-T Ford, entered in the American Bicentennial's Around-the-World Auto Race planned for mid-1976, will team up with a NASA satellite in a unique tracking experiment.

The Ford is one of 12 antique cars scheduled to compete in a 60-day point-to-point rally from Paris across Europe, Asia and the United States to New York City as an official event of the National Bicentennial celebration. All of pre-1915 vintage, the cars will travel the approximate route of the Great Race of 1908 in a reversed direction.

NASA's Goddard Space Flight Center will conduct a tracking experiment to help evaluate a research system normally used for the remote collection of environmental data via satellite.

Driven by Robert H. Pickard of Adelphi, Md., the Model-T Ford will be equipped with a 30-pound electronics package for all or part

of the race. This rugged, self-powered unit will be used to transmit the ground speed of the moving car to the Random Access Measurement System (RAMS) carried by NASA's Nimbus-6 meteorological research satellite.

Nimbus-6 orbits the globe from pole to pole every 108 minutes. Due to the rotation of the Earth, the satellite covers the entire globe once every 12 hours. All information collected by Nimbus-6 is relayed to Goddard through an Alaskan ground station as the satellite passes over the north pole at the end of each Earth orbit.

No information can be relayed from Goddard to the Model-T Ford since the tracking package carried by the car is capable only of transmissions.

The RAMS is normally used to collect and transmit temperature, pressure and other environmental data from instruments carried aboard moving platforms such as balloons and buoys. Two successive

balloon positions, as relayed through the satellite, permit calculation of the wind velocity.

"While our RAMS experiments with balloons and free-floating buoys are highly successful, the auto race offers the opportunity to demonstrate the system for ground tracking applications, where transmissions may encounter various kinds of interference," said Goddard's Charles E. Cote.

"Use of the RAMS during the race should also provide us with additional data on system accuracy," Cote added.

Although an employee of GSFC, Robert H. Pickard will represent himself as owner of the Model-T Ford. An avid car enthusiast, Pickard is currently rebuilding the antique car for the race.

Pickard, 43, has been an active member of the U.S. space effort since the early days of the U.S. satellite — Vanguard. As a specialist in radio communications, he has played key roles in research projects that laid the groundwork for today's global satellite communications systems. He is presently project manager for a major meteorological/communications satellite system called the Geostationary Operational Environmental Satellite.

Starting in Paris, France on about May 31, 1976, the competing cars will travel through Belgium, West Germany, Austria, Hungary, Yugoslavia, Bulgaria, Turkey, India, Japan and the United States. The race will terminate in New York City on about July 17.

The total number of entries in the world race is limited to 12. The starting line-up to date includes competitors from the United States, Australia, Belgium, England, Italy, and Uruguay. Additional details on the race may be obtained from Mike Lapine, U.S. Committee for the Around-the-World Auto Race, Cleveland, Ohio, phone (216) 241-1825.



IN GREAT-RACE REPLAY — Goddard Space Flight Center engineer Robert H. Pickard checks the headlamp on his 1914 Model-T Ford that he will drive in the Bicentennial Around-the-World Auto Race. The Model-T will be fitted with an electronics package that can be tracked by the Nimbus-6 satellite.

Most 1976 NASA Launches Are for Cash Customers

Most of the launches of spacecraft in calendar 1976 by NASA will be for cash customers.

NASA has plans to launch 19 satellites or space probes during the U.S. Bicentennial Year and will be reimbursed by customers for 15. The customers include NATO, the Republic of Indonesia, the International Telecommunications Organization, Comsat General Corp., RCA, the National Oceanic and Atmospheric Administration, and the Department of Defense.

In 1975 NASA had nine reimbursable launches in which the customers provided the spacecraft and paid NASA for the launch vehicles and the associated launch costs. Total NASA launches last year, including manned Apollo Soyuz mission, numbered 21. Two failed to achieve orbit.

"The growth of the reimbursable launch activity is a true indication of the maturity of the space program," Joseph B. Mahon, NASA's Director of Expendable Launch Vehicles, said. "When commercial firms and other outside-NASA orga-

nizations account for more than two-thirds of NASA launches, and pay for them, the age of space exploitation is really here."

Credit Union Voting Starts

Seven candidates including two incumbents are seeking the four positions on the Credit Union Board of Directors. The two incumbents seeking reelection are Harold J. Ferrese and Paul M. Sturtevant. Others seeking election to the board are Maurice Blackman, James C. Dallas, L. Renee Hall, Noel T. Lamar, and Ursula Nuechtern. William J. Forsyth, Stuart Lenett, and Roy C. Stokes are seeking election to the two Credit Committee positions. Biographical data, furnished by the candidates, will be posted in the lobby of the Credit Union.

The annual meeting of the Credit Union is scheduled for Thursday, March 4, 1976 at approximately 7:30 pm. Voting machines will be used for the election permitting the results to be announced at the annual meeting. Voting for the election will start five (5) days prior to the annual meeting. The polls will close when the annual meeting is called to order. The voting times and places are as follows:

Saturday, February 28 — Credit Union, 9-12; Monday, March 1 — Credit Union, 10:30-5; Tuesday, March 2 — Credit Union, 10:30-5; Wednesday, March 3 — Credit Union, 10:30-5; Thursday, March 4 — Credit Union, 10:30-1; and the JSC Auditorium, 4 until the start of the annual meeting.

All members are encouraged by the Supervisory Committee to vote for the candidate of their choice. Any problems or questions should be directed to Jim Ragan or Bill Bates of the Supervisory Committee. Members are reminded it is Credit Union policy that no electioneering be permitted on the Credit Union premises during the election.



NSA Chapter Plans Luncheon

The NASA-Clear Lake Chapter of National Secretaries Association will hold a Secretaries Day luncheon April 21 as part of the 25th annual Secretaries Week April 18-21.

NSA in cooperation with the US Department of Commerce began Secretaries Week to bring recognition to secretaries and to inform the public of the secretary's contribution to community educational, professional and civic growth.

Details of the local chapter luncheon will appear in March issues of the *Roundup*.

Nancy Gabriel Selected Outstanding Secretary

Nancy H. Gabriel, secretary to E&D assistant director for program development Robert O. Piland, has been selected for the January JSC Outstanding Secretary Award.

Gabriel was cited in Piland's recommendation for the award for her performance in a recent NASA study, "Outlook for Space." She was "the sole staff support for what turned out to be a most complex operation continuing for the better part of a year ... compilation of working group report, maintaining working group library, meeting scheduling and logistics, document publishing ..."

The difficulty of these efforts, and the resulting significance of Mrs. Gabriel's effort lies in the breadth, complexity and length of



the effort with widely-scattered individuals. Other than the working group chairmen, Mrs. Gabriel was the only person in a position to provide continuity and administrative coordination to the effort.